I CLAIM AS MY INVENTION:

1. A magnetic resonance gradient coil system comprising:

a plurality of gradient coils respectively formed by multiple sub-coils;

at least two structurally independent units comprising respective portions of said multiple sub-coils; and

a carrier to which said units are attached separated from each other to produce a space between said units adapted to receive a magnetic resonance antenna system between said units.

2. A gradient coil system as claimed in claim 1 wherein said units and said carrier are hollow cylinders.

3. A gradient coil system as claimed in claim 1 wherein said units and said carrier are encapsulated.

4. A gradient coil system as claimed in claim 1 wherein said carrier comprises a shim system.

5. A gradient coil system as claimed in claim 1 wherein said carrier is comprised of a composite material.

6. A gradient coil system as claimed in claim 5 wherein said composite material is selected from the group consisting of glass and carbon fiber reinforced synthetic.

7. A gradient coil system as claimed in claim 1 comprising a separator disposed between said units on said carrier to precisely separate said units from each other on said carrier.

8. A gradient coil system as claimed in claim 7 wherein said separator is attached to said carrier.

9. A gradient coil system as claimed in claim 7 wherein said carrier has a circumference, and wherein said separator comprises at least three spacers distributed circumferentially around said carrier between said units.

10. A gradient coil system as claimed in claim 1 comprising a securing arrangement attached to said carrier that secures said units on said carrier in a direction of the separation between said units.

11. A gradient coil system as claimed in claim 10 wherein said carrier has a front side and wherein said securing arrangement is attached to said front side of said carrier.

12. A gradient coil system as claimed in claim 11 wherein said carrier has a circumference and wherein, at said front side of said carrier, said securing arrangement comprises at least three securing elements circumferentially distributed around said carrier.

13. A gradient coil system as claimed in claim 1 comprising adjusting screws screwed into said carrier for attaching said units to said carrier.

14. A gradient coil system as claimed in claim 13 wherein said adjusting screws comprise, for each of said units, three rows of adjusting screws with at least three adjusting screws per row.

15. A gradient coil system as claimed in claim 14 wherein said carrier has a circumference and wherein said rows are circumferentially distributed around said carrier.

16. A gradient coil system as claimed in claim 14 wherein each of said adjusting screws comprises a threaded bolt and a pressure plate with an application of soft material thereon.

17. A gradient coil system as claimed in claim 16 wherein said material is selected from the group consisting of rubber and plastic.

18. A gradient coil system as claimed in claim 1 comprising an adhesive applied between said units and said carrier for attaching said units to said carrier.

19. A gradient coil system as claimed in claim 18 wherein said carrier comprises a plurality of openings for application of said adhesive.

20. A gradient coil system as claimed in claim 19 wherein said carrier comprises, for each of said units, at least three rows of said openings, with at least three openings per row.

21. A gradient coil system as claimed in claim 20 wherein said carrier has a circumference, and wherein said rows are circumferentially distributed around said carrier.

22. A gradient coil system as claimed in claim 18 wherein said adhesive is selected from the group consisting of silicone adhesives, foam adhesives and adhesive resins.

23. A magnetic resonance apparatus comprising:

a magnetic resonance scanner having a cavity therein adapted to receive an examination subject for obtaining magnetic resonance data from said subject; and

a gradient coil system disposed in said cavity, said gradient coil system comprising a plurality of gradient coils respectively formed by multiple sub-coils, at least two structurally independent units comprising respective portions of said multiple sub-coils, and a carrier to which said units are attached separated from each other to produce a space between said units adapted to receive a magnetic resonance antenna system between said units.

24. A magnetic resonance apparatus as claimed in claim 23 wherein said cavity has a barrel-shaped central region, and wherein said gradient coil system, in said central region, conforms to said barrel shape.

25. A magnetic resonance apparatus as claimed in claim 23 further comprising an antenna system attached to said units, disposed between said units on said carrier.